

The aviation industry is on the search for greener fuels.

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MORE and more people are “reaching for the skies” these days – flying that is, motivated by how air travel has become accessible and cheap. It is a burgeoning and exciting time for the aviation industry, with air traffic projected to double over the next 20 to 25 years.

However, this growth comes with a price – carbon is emitted during the combustion of aviation fuel. Though the aviation industry contributes just 2% to 3% of global carbon emissions annually, the International Air Transport Association (IATA) is nonetheless pushing airlines to reduce the figures. Targets have since been set – air transport will have carbon-neutral growth from 2020 and will cut emissions by a further 50% come 2050 (from the baseline year of 2005).

For commercial aircraft manufacturer Airbus, the strategy for the last 40 years has been to produce innovative technologies that are fuel-efficient and silent (to reduce noise pollution). Now, it is taking a step further by looking at sustainable fuels that can be derived from renewable biomass or waste. (Airbus is the first aeronautical company to have earned the ISO14001 environmental certification for all its sites, products and services through the life cycle).

In January, Airbus signed a partnership agreement to establish the Malaysian Centre of Excellence on Sustainable Aviation Fuels with the Aerospace Malaysia Innovation Centre, Malaysian Industry-Government Group for High Technology, Universiti Putra Malaysia, Malaysian BioTech Corp and CIRAD, a French research centre working on agricultural and development issues.

Airbus New Energies programme manager

Greening jet fuels



Flying with less: The new Airbus A350 XWB is 25% more fuel-efficient than earlier generations of the aircraft. – AFP

Frédéric Eychenne says the centre will study sustainable biomass production and determine suitable feedstocks for aviation fuels.

A current problem is the availability of feedstocks as well as the cost and the ability to produce them in a sustainable manner.

"We also want to avoid competition for feedstock with water and food," says Eychenne. He adds that currently, there is insufficient information on supplies of feedstocks. Stock availability is based on predictions which in turn translates to higher costs.

He shares that Airbus minimises its environmental footprints through four pillars.

First is by improved technology to produce better products with lower fuel consumption. He says Airbus aircraft use 70% less fuel than they did 40 years. An efficient aircraft uses less fuel, thereby cutting down costs. Fuel accounts for between 30% and 35% of an airline's costs.

The second pillar involves air traffic management, which consists of route optimisation, allocation of the best aircraft type for specific routes, and traffic co-ordination to prevent a plane's time lag that would otherwise burn more fuel.

The third pillar is to develop alternative energies by working with various partners. Airbus has teamed up with the European Commission, various airlines and aviation fuel producers to promote the use of sustainable aviation fuels. In one pilot project with KLM, some 50 flights between Amsterdam and the Caribbean will be done over two years on fuels extracted out of vegetable oils. In South America, researchers are trying to create jet fuel from the oils of jatropha and other plants.

In Australia, Airbus has teamed up with Virgin Australia Airlines for the planting of eucalyptus and in Spain, a plant called camellina. Lufthansa conducted over 1,000 flights between Hamburg and Frankfurt in 2011 on a biofuel blend of 50% jatropha oil and kerosene jet fuel.

The final pillar entails a global agreement in 2016 where the International Civil Aviation Organisation will form market-based measures to reduce pollution from the aviation sector. This could be in the form of environment-related taxes, charges and subsidies, emissions trading and other tradeable permit systems,



Airbus New Energies programme manager Frédéric Eychenne says the aviation industry is actively looking for greener fuels to address the industry's carbon footprint.

deposit refund systems, environmental labelling, licences and economic property rights.

Eychenne says sustainable fuels cannot be the sole factor that will limit carbon emissions by 2050.

"At the end of the day, it boils down to best practices and concrete solutions to operate a flight, whether it is integrating biofuel or improving air traffic management or energy consumption. With these capabilities, we will develop 'perfect flights' in the near future."

He says the aviation industry is continuously doing its part in carbon overhaul through efficient products. The latest Airbus aircraft, A350 XWB, is 25% more fuel-efficient than the previous generation while the A320neo is set to reduce carbon dioxide emissions by 15%.

The Malaysian Centre of Excellence on Sustainable Aviation Fuels agreement, which spans three years, will be divided into two phases. The first phase will assess the feasibility of various fuel sources for commercial use. In the next two years, short-listed options will undergo pilot projects.

There is still very little use of biomass fuel in Asia Pacific now. The market for biojet fuel is less important than the market for ground transportation (like biodiesel, bio-ethanol) as a lot more investment will be required.

"What we need is continuous effort in innovation towards new fuels. Huge progress has been made on sustainable aviation fuels in the last three years. Innovation is bringing about progress that will allow these fuels to be affordable in the coming decades," says Eychenne.